REMARKS

. Applicant thanks the Examiner for the indication of allowable subject matter with

respect to Claims 2 and 4 in the instant application. Applicant has reviewed the outstanding

Final Office Action and rejection based on the Suzuki reference, United States Patent No.

6,515,703. In light of the rejection based upon a comparison of the prior art and the claims,

Applicant has modified the claim language for the independent claims and additionally

Applicant has modified the currently allowed claims to include all the limitations of their

prior base claims.

Accordingly, Applicant submits that Claims 2 and 4 remain in condition for

allowance, and all of the remaining claims in the application also are now in condition for

allowance. Through this amendment, Applicant has modified the original independent claims

1, 3 and 5 to further require that the logic levels applied to the transfer electrodes assume only

two logic levels, either a high state or a low state logic level. The Suzuki reference is directed

to a much different transfer method and employs a tri-state signal protocol, and the specific

signal arrangement described therein only incidentally falls within the scope of the

independent claims prior to the present amendment. Actually, neither Suzuki nor any other

reference of record provides any teaching or suggestion whatsoever regarding Applicants

new and improved signal transferring method that is described in accordance with the present

invention.

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As noted in Applicants specification beginning on page 2, when the transfer speed in

the vertical charge transfer portion is increased, the period for time of accumulating the

charge in the vertical transfer portion is reduced and the quantity of charge handled in the

vertical transfer portion is decreased. As a result, there is a concern that the transfer

efficiency is reduced. In particular, for electronic sensors there is a tendency that an increase

in the number of pixels is also demanded in order to realize a higher image resolution for

both moving and still pictures. It is therefore necessary to take into account these demands,

and accordingly it is necessary to find an effective technique which will suppress the negative

effects associated with the decrease in the handling charge quantity in the vertical charge

transfer portion of an imaging device.

Applicants innovation has overcome these deficiencies by describing an innovative

charge transfer technique which suppresses the negative effects associated with the decrease

in the handling quantity of electric charges when transferring signal charges at high speed in

the vertical charge transfer portions. In accordance with the systems and methods described

in the present invention, high logic level driving pulses are selectively applied to the transfer

electrodes in respective sectional period in a vertical charge transfer, and wherein the

sectional period in the vertical charge transfer period in which the number of transfer

electrodes to be applied with a high logic level driving pulses is minimum is set to be longer

than that of other sectional periods. As a result, a dramatic improvement in the charge

handling is provided.

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Neither Suzuki nor any other reference of record provides teaching or suggestion

regarding this advance in the art. More specifically, the *Suzuki* reference is merely directed to an image pick-up device that includes a plurality of photoelectric conversion cells in a

charge transfer device including charge transfer cells wherein the number of charge transfer

cells is greater than the number of photoelectric conversion cells. As noted above, Suzuki

teaches a tri-state signal transfer protocol, but there is no teaching or suggestion regarding the

relationship of the signals as described and claimed in the instant application.

Accordingly, in light of the foregoing, Applicant respectfully submits that all claims

now stand in condition for allowance.

Respectfully submitted,

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